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Does banking development matter for new firm creation in the informal sector? Evidence from India☆

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Abstract

There is little evidence on the effect of banking development on firm creation in the small firm sector. This paper examines whether differences in banking sector penetration across Indian districts explain the differences in firm start-ups in Indian informal sector. Our empirical strategy lies in examining the effect of the spread of banking facilities at the district level on new firm formation in the informal sector for the period 1994–1995 to 2010–2011. Our results confirm that local bank availability is associated with significant increase in enterprises in the informal sector and the effect is more pronounced for larger enterprises in the sector.

JEL classification: G190; L260; O160

Keywords: Banking development; Firm creation; Informal sector; India

1. Introduction

The regional dimension of entrepreneurship has been a subject of great importance to scholars of regional development (see for example, Acs and Storey, 2004; Acs and Armington, 2004). Small firms are an important source of economic dynamism and particularly job creation, and the formation of such firms can be a crucial determinant of economic growth and employment generation, especially in lagging regions (Fritsch, 1997; Audretsch and Thurik, 2004; Parker, 2004; Audretsch and Keilbach, 2004). Historically, in most countries, whether in the developed or developing world, rates of new firm formation differ significantly across regions within the same country (Keeble and Walker, 1994; Braunerhjelm and Borgman, 2004). Such variation in the rate of new firm formation is often seen as a cause of wide divergence across regions in the same country in economic growth and employment opportunities, and can become a matter of significant policy concern for policy-makers.

Why do we see such wide regional variations in new firm formation? While an emerging literature has attempted to address this question, we still do not know enough on what explains the regional dimension of new firm creation, and what governments can do to promote new firm creation in the more backward regions (O'Farrell, 1986; Armington and Acs, 2002). As Acs and Storey (2004) argue, "the instruments available – such as government assistance programme, local expenditure patterns or even political parties – seemed to exert little or no explanatory power" (p. 872). One crucial determinant of new firm creation is the availability of external finance. The theoretical literature postulates an unambiguous positive relationship between the easing of credit constraints on entrepreneurs and the rate of new firm formation (Evans and Jovanovic, 1989; King and Levine, 1993). While much of the previous literature has studied other determinants of the spatial variations in new firm creation such as agglomeration economies, demographic structure, infrastructure and human capital (see for example, Bartik, 1989; Ellison and Glaeser, 1999; Bonte et al., 2009; Ellison et al., 2010; Doms et al., 2010), there has been less research on the role that banking development can play in explaining why rates of new firm

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creation differ so starkly across regions in a single country.[1] This is a crucial omission – the empirical literature on banking development finds a strong positive effect of the latter on business start-ups (Parker, 2002; Cassar, 2004) and at the same time, levels of banking development differ greatly within countries, providing a clear reason why banking development may matter for regional variations in new firm creation (Guiso et al., 2004). In this paper, we attempt to rectify this omission in the literature by examining whether banking development exerts a positive effect on new firm creation.

Another significant omission in the literature on the regional dimension of new firm creation, especially in the developing country context, has been the relative neglect of the informal sector in the analysis of new firm creation. This is a surprising omission, given the large presence of the informal sector in developing countries. For instance, the ILO (2002) estimates that 48 per cent of workers in North Africa, 72 per cent in Sub-Saharan Africa, 51 per cent in Latin America and 65 per cent in Asia, are employed in the informal economy. De Soto (2000) argues that many entrepreneurs in developing economies prefer to be in the informal sector, as the bureaucratic procedures involved in permission to set up a business in the formal sector discourages nascent entrepreneurs. The informal sector is the preferred site where many entrepreneurs would like to start their operations, and it is often the sector where the most dynamism and creativity among small firms can be found in developing economies (Prahalad, 2005; Maiti and Sen, 2010). Yet it is usually the entrepreneurs in the informal sector who are most likely to be credit constrained and dependent on external finance, as these entrepreneurs generally tend to be low-wealth, and therefore, not having the necessary savings to start an operation on their own funds (Blanchflower and Oswald, 1998; Parker, 2002; Hurst and Lusardi, 2004). Since entrepreneurs in the informal sector would not be able to borrow from bond or stock markets that are not geographically confined, they would have to rely on local financial intermediaries for their sources of funds for investment. In this case, greater outreach of banking facilities would certainly be expected to have a significant role to play in explaining variation in new firm creation across regions in the same country.

In this paper, we examine the role of banking development in explaining new firm formation in the informal manufacturing sector of a developing country. The country we study is India, where about 80 per cent of manufacturing employment and 17 per cent of manufacturing output is in the informal sector (NCEUS, 2007). India provides an ideal context to study the relationship between banking development and new firm creation in the informal sector for four reasons. Firstly, regional development is very uneven in India, with more prosperous Indian states having per capita incomes that are close to five times that of the poorest states, and there has been an increase in regional growth divergence since the economic reforms of 1991 (Ramaswamy, 2007; Nayyar, 2008). The location of informal manufacturing enterprises also shows a highly uneven regional distribution (Ghani et al., 2011). Secondly, while the Indian government actively promoted an equitable spread of financial institutions till 1991 under a system of branch licensing policy for nationalised commercial banks which made it mandatory for these banks to open branches in rural and semi-urban areas and remote regions of the country, this policy has been considerably weakened since the financial liberalisation enacted as part of the 1991 economic reforms. This may have led to greater inequality in banking development in more recent years (Burgess and Pande, 2005; Cole, 2009). Thirdly, the analysis of the determinants of new firm creation across regions within a country allows for institutional, legal and cultural factors to be more adequately controlled for, since there are fewer differences among regions than among countries (de Guevara and Maudos, 2009). Finally, the country has witnessed an increase in the number of enterprises in the informal sector during the period 1994–2011. The country has also witnessed significant financial deepening as the number of bank branches have went up considerably during the same period.[2] This permits us to investigate whether spread of banking facilities can be a factor responsible for the increase in number of small firms in India.

In this paper, we use district level data for India to examine whether the differences in banking sector penetration can explain variation in rates of firm start-ups in Indian districts. We use number of enterprises in the informal sector as a proxy to capture new firm creation at the district level. Our period of analysis is 1994–2011. One innovative feature of our analysis is that we also test for the relationship between banking sector outreach and firm entry among firms that employ both family and hired workers. Analysing the effects of banking development separately for these firms allows us to assess whether finance constraints are more binding among some organisational forms in the informal sector than others (that employ only family labour).

We use a rich data-set of large representative surveys of informal firms for the period 1994–1995 to 2010–2011. We find that banking development promotes new firm creation and aids firm growth in the informal sector in India. The effect is more pronounced among larger firms employing both family and hired labour.

The rest of the paper is in five sections. In the next section, we summarise related literature on the credit-start-ups linkage and on the regional dimension of new firm creation in India. In Section 3 we provide a brief discussion of financial policies in India. Section 4 discusses the empirical strategy employed in the study, and provides a description on the data and the variables used in the analysis. Section 5 presents the results of the empirical analysis. Section 6 concludes.

[1] An exception is de Guevara and Maudos (2009), who investigated the role of regional financial development on firm growth in Spanish provinces and found that firms in industries with a greater dependence on external finance grew faster in more financially developed provinces.

[2] The data indicates that the number of enterprises in the informal sector which were 12 million in 1994-1995 increased to 17.2 million in 2010-2011. The same period also witnessed an increase in number of bank branches, from 63,817 in 1995–1992, 117 in 2011.

2. Related literature

2.1. Finance and new firm creation

A very rich empirical literature has shown that that the development of a country's financial sector greatly facilitates its economic growth (Goldsmith, 1969; Shaw, 1973; King and Levine, 1993; Rajan and Zingales, 1998; Levine et al., 2000). A deeply spread banking sector is a clear indicator of a well-developed financial sector of a country. Particularly in low income countries, banks still constitute the largest component of financial system – for example, in India, about 49 per cent of external funds for small and medium firms come from banks and term-lending institutions (NSSO, 2008).[3] The greater spread of banking infrastructure can make significant impact on economic growth by facilitating more business start-ups and greater entrepreneurial activity (Parker, 2004; Beck et al., 2005). From a theoretical standpoint, banking development can positively affect entrepreneurial activity in three ways. Firstly, a greater spread of banking facilities implies that more resources are mobilised to finance entrepreneurial activity (King and Levine, 1993). Secondly, a more deeper banking sector penetration allows for the better screening of prospective entrepreneurs and the choice of more promising projects that are likely to succeed (Paulson and Townsend, 2004). Thus, financial intermediaries are better able to assess the ability of the entrepreneur to succeed with the proposed project and are less likely to reject low-wealth but high-ability investors who are not able to offer a high level of collateral when borrowing from these intermediaries (Hurst and Lusardi, 2004). Thirdly, presence of more developed banking sector allow entrepreneurs to diversify risk from innovative activities that lead to better functioning financial systems, allowing them to take on more risky but high return projects.

The empirical evidence on whether banking development has a strong positive effect on entrepreneurial activity is limited. Available limited evidence, however, points to a positive relationship between high entry barriers and lower use of lending and deposit services of banks (Beck et al., 2007). Among the few studies that have studied the effect of banking development on new firm creation, Paulson and Townsend (2004) find that liquidity constraints play an important role in determining who becomes an entrepreneur, using data from rural Thailand. Aghion et al. (2007) find that deeper and more developed banking sectors are associated with higher entry of small firms in sectors which are more dependent on external finance. In the Indian case, Bell and Rousseau (2001) find a positive relationship between banking development and industrialisation using time-series data from 1950 to 1990 but do not directly study the effect of banking development on entrepreneurial activity.

2.2. Other determinants of new firm creation

Agglomeration economies are widely seen as being the most important determinant of why new firms locate in regions where other firms are present, and why we see clear spatial clustering of entrepreneurial activity (Henderson, 1988). Firms tend to cluster together in regions with good access to markets, leading to greater external economies of scale, through the use of specialised labour and investment in cost reducing technologies (Lall et al., 2004). Beyond the firm level, agglomeration economies can also be driven by industry and regional factors. Industry benefits would include access to specialised know-how (i.e. knowledge diffusion), the presence of buyer–supplier networks, and opportunities for efficient subcontracting (Lall et al., 2004). Employees with industry-specific skills will be attracted to such clusters giving firms access to a larger specialised labour pool. At the regional level, agglomeration economies would accrue from easier access to complementary services (e.g. publishing, advertising, banking), and information transfers between industries.

In addition to agglomeration economies, the literature has also identified human capital, infrastructure and social and cultural factors as being important determinants of the spatial variation in new firm creation. Armington and Acs (2002) argue for the importance of human capital and the propensity of locally available knowledge to stimulate innovative activity which culminates in new firm formations. Highly educated populations provide the human capital embodied in their general and specific skills for implementing new ideas for creating new businesses. They also create an environment rich in local knowledge spillovers, which support another mechanism by which new firm start-ups are initiated and sustained (Ozer, 2008). The availability of good quality infrastructure such as roads and telecommunication links would play an important role why firms prefer to locate in regions with high levels of infrastructural services. Social factors such as the orientation of the population towards risk-taking activities and norms and social values that reward self-employment rather than wage employment would also be important in explaining why some regions within a country tend to see higher entrepreneurial activity than others.

In the Indian context, several studies have shown the importance of agglomeration economies, human capital and infrastructure in determining the spatial variation in entrepreneurial activities. For example, Ghani et al. (2011) find that the incumbent composition of manufacturing influence new firm entry, and that educational levels and infrastructure matter in fostering greater new firm creation. Kambhampati and Mccann (2007) find strong positive effects of agglomeration economies in the regional performance of Indian industry. Lall et al. (2004) find significant concentration of manufacturing firms in large cities, driven in part by the presence of transport infrastructure linking these cities to domestic markets. With the exception of Ghani et al. (2011), these studies do not look at the spatial determinants of new firm creation in the informal sector, and none of these studies examine the role of banking development in explaining regional variations in new firm creation. This omission is significant, given the changes in Indian financial policies since the 1990s, which may have led to greater inequality in spread of bank facilities across regions. We turn to these policies next.

[3] Only 16 per cent of the financial needs of small and medium firms were met from money lenders, friends and relatives.

3. Financial policies in India

In the 1950s and 1960s, the Indian financial sector operated in a fairly liberal environment. This period saw the consolidation of the Reserve Bank of India (RBI) in its role as the agency in charge of the supervision and control of banks. An important feature of the banking sector during the period 1951–1968 was that a large proportion of bank credit went to the industrial sector, and within it, to the large borrowers, with the agricultural sector getting a little over 2 per cent of bank credit. There was a growing realisation among Indian policy-makers that there was a need for extensive social control of the Indian banking system. In July 1969, as a consequence, 14 of the largest commercial banks were nationalised (Sen and Vaidya, 1997).

The evolution of the Indian financial sector beginning from 1969 can be divided into two distinct sub-periods: first, a period of financial repression from the early seventies to the mid-1980s; second, from 1991, a period of an increasingly liberalised financial sector. In the first period, the Indian government's intervention in financial markets began with the nationalisation of 14 private sector banks in 1969 followed by the nationalisation of six more private sector banks in 1980. The primary objective of the nationalisation was to ensure that credit availability matched the wider development objectives of the government (Gupta et al., 2011). Banks were increasingly pressurised to lend to the "priority sector", comprising agriculture and allied activities, small-scale industry, retail trade, transport operators, professionals and craftsmen. This meant that more credit was available to small-scale firms. At the same time, there was an increasing recourse to the banking sector via mandatory investment by commercial banks in government securities to finance the ever-widening budget deficits of the central government in the seventies and the eighties, possibly crowding out bank financing of private investment. While the commercial banks essentially provided short term credit to small firms in the manufacturing sector, long term loans to this group of firms were provided by the Small Industries Development Bank of India (SIDBI) (Sen and Vaidya, 1997).

While social control of the banking sector may have led to increasing inefficiency in the financial intermediation process (Athukorala and Sen, 2002), there was significant growth in the commercial banking system in the country both in geographical coverage and amount of resources mobilised. This was in great part due a strictly enforced branch licensing policy followed by the RBI from 1977 onwards. Under this policy, the RBI restricted banks from opening branches in urban and metropolitan areas. Instead, the thrust of branch expansion was mostly to the 'under-banked' districts in rural and semi-urban areas. The RBI mandated that to obtain a license for a branch opening in a location with one or more branches (a banked location), a bank must open branches in four eligible unbanked locations. The policy remained in place till 1990. In addition, to ensure that banks did not concentrate their lending in urban areas, the RBI required that every bank branch maintained a credit–deposit ratio of 60 per cent within its geographical area of operation (Burgess and Pande, 2005). Furthermore, in contrast to the experience with financial repression in other developing countries, the real rate of return on bank deposits has been positive more or less all through the 1970s and 1980s. Primarily due to the branch licensing and real interest rate policies, there was a significant financial deepening in the Indian economy in the seventies and eighties, with an increase in bank deposits as a percentage of national income from 15.3 in 1969 to 51.8 in 1994.[4]

In 1991, as a part of the IMF financed structural adjustment programme, interest rates were deregulated and government regulation of financial markets substantially reduced. The most significant change in financial sector policies was the relaxation of branch licensing policies by the RBI, with banks now allowed to close down loss-making rural and semi-urban branches as well as open branches in regions where there were already a large presence of bank branches. Burgess and Pande (2005) show that while from 1977 to 1990, there was a rapid expansion of bank branches in financial underdeveloped states, there was a dramatic reversal in the regional dispersion of commercial banks since 1990, especially in rural unbanked areas. Combining a before–after evaluation strategy with a policy-induced cross-sectional variation in the spread of banks, they find large effects of rural banks in reducing poverty in the unbanked or deficit states in 1977–1990. In contrast, Kochar (2011) finds that expansion of banking in rural areas has less of an effect on the poor as compared to the non-poor. Since most of the urban working poor tend to be either owning or employed in firms in the informal sector, it is important to understand the effects of banking development on new firm creation in the informal sector. Clearly, the greater the increase in informal firms due to banking development, the larger the effect we may expect of banking service expansion on poverty (Sen, 2014).

4. Empirical specification, data and variables

4.1. Empirical specification

The focus of this study is to analyse the effect of banking development on new firm creation in the informal sector. To be specific, we examine whether the firm creation at the district level in the informal sector in India are driven by the spread of banking facilities. To test this relationship, we estimate the following equation:

$$ENT_{d,t} = \beta_0 + \beta_1 FIN_{d,t} + \sum_{m>1} \lambda_m Z_{d,t} + \phi_t + \varepsilon_{d,t} \qquad (1)$$

where ENT_{dt} is our measure of new firm creation in district d and in year t. We use number of informal sector enterprises to represent new firm creation at the district level.[5] Our variable

[4] Burgess and Pande (2005) show branch expansion into rural unbanked areas significantly reduced rural poverty, though the branch expansion programme left urban poverty outcomes unaffected.

[5] Guiso et al. (2004) employed a similar indicator (number of firms per capita) to assess the role of local financial development on firm creation in Italy. Ideally, we would have liked to use a panel of informal firms that capture firm entry and exit. However, the NSSO data is in the form of repeated cross-sections, and the identities of firms are not provided, which does not allow us to construct a panel of informal firms.

of interest is FIN_{dt}, a measure of banking development (e.g. branch density) in district d and in year t. The coefficient of β_1 would, therefore, capture the effect of banking development (or spread of banking activities) on new firm creation. A positive and significant coefficient of β_1 indicates that spread of banking activities promotes new firm creation in Indian districts. Z is the vector of district level controls. Our district level controls are the level of urbanisation in the district as measured by the share of urban population in total population (URBAN), the proportion of SC/ST in total population (SHSCSTPOP) and the proportion of individuals who are educated at primary level or below (PRIMEDU). We control for the possibility that the level of urbanisation and availability of better human capital could make a positive impact on new firm creation at the district level. SHSCSTPOP would control for the possibility that social and economic backwardness will negatively influence firm creation in the informal sector. We include year dummies, γ_d, to account for the possibility that economy wide demand shocks may have an impact on new firm creation. The subscript d stands for district, s for state and t for time. We estimate Eq. (1) for all enterprises (that include both family and non-family firms). We also separately estimate Eq. (1) for non-family firms that employ both family and hired labour (where we exclude firms that employ only family labour), to allow for the possibility than banking development may affect firm creation in the very small family firms (which are less reliant on commercial bank loans, and mostly borrow from family, friends and informal sources of finance such as money-lenders) differently than the larger non-family firms.[6] District is our unit of analysis in this study. In total, by considering 364 districts covering 15 major states of India and four years of data, we work with a dataset containing 1456 observations.

A possible concern with the OLS estimates of Eq. (1) is that the coefficient on FIN in these estimates would be biased due to possible endogeneity of the variables that we use to measure banking development at the district level. For example, commercial banks may place their branches in most dynamic regions as the demand for external funds would be higher in these regions. In this case, the presence of finance constraints would be endogenous to new firm formation in the district. To address endogeneity concerns, we also estimate Eq. (1) using instrumental variable (IV) methods. As instruments we use proportion of villages with paved approach road in total villages in a district (ROADVILLAGE) and whether there is a national highway or a broad gauge line passes through the district (TRANSPORT). We use instrumental variables that we believe capture the supply side of financial intermediation. An important supply side consideration for financial intermediaries to place their branches in district is the preferences of senior level staff of these intermediaries as to where they would like to be based. Important factors that will determine the preferences of senior level staff of financial intermediaries to take up residences in districts would be the access of the district in terms of a major transportation link, and the presence of provision of better infrastructure, captured though better roads, in the district. This set of instrumental variables will meet the exclusion criteria as they would not have a direct effect on new firm creation over and above their indirect effect working through the presence of banking infrastructure in districts.

4.2. Data

For the analysis, we combine the data on bank availability at the district level with the district level data on the informal manufacturing firms for the period 1994–1995 to 2010–2011, the period for which complete unit level data on informal firms are available. Data on the informal manufacturing sector are drawn from the surveys on the sector conducted by the National Sample Survey Organisation (NSSO) in its 51st (1994–1995), 56th (2000–2001), 62nd (2005–2006) and 67th (2010–2011) rounds. The NSSO is the agency that collects information on various aspects of the enterprises/units in the informal manufacturing sector quinquennially. These are nationwide enterprise level surveys covering all the Indian states and Union Territories (UTs) and are stratified by district. Since most informal enterprises are not registered with any government authority, the NSSO uses a block enumeration approach to ensure a representative sample of the informal sector in every district. We aggregate the unit level data to the district level and arrive at the district level estimates using the multipliers supplied by the NSSO in their datasets.

The district level banking development variables for the same period are drawn from the Reserve Bank of India (RBI) publication, Basic Statistical Returns of Scheduled Commercial Banks in India. These reports provide comprehensive data on state-wise/district-wise distribution of branch offices, bank employees, number of deposits and amount deposited and outstanding credit of scheduled commercial banks in India. These data are collected through the annual statistical surveys from the offices of scheduled commercial banks in India including Regional Rural Banks.

The NSSO surveys disclose the names of the districts in which firms are located, and we merged the NSSO and the RBI datasets using a one-to-one mapping of 364 districts for the two datasets. New districts have been created in many states during the period under study. In order to facilitate comparison over time at the district level, these new districts have been merged with their parent districts. The study is confined to 15 major states of the Indian Union.[7] Thus our district level data cover 364 districts across 15 major states for 4 years.

Data on our district level control variables are obtained from the 2001 Census of India.

[6] Our estimates for the period 2005-2006 suggests that large non-family firms constitute about 15 per cent of total firms in the informal sector in India.

[7] The states included are Andhra Pradesh (AP), Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh (MP), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu (TN), Uttar Pradesh (UP), and West Bengal (WB).

4.3. Variables

We use number of enterprises as proxy for new firm creation.[8] As we are also interested in capturing the effect of external finance on new firm creation across different organisational forms in the informal sector, we also look at the effects of banking development on new firm creation for firms that employ hired labour, besides examining the relationship for all firms.

Recent studies have developed several indicators to represent the ability of financial intermediaries to improve loan monitoring and screening. One indicator that is frequently used in the literature on banking is branch density (Jayaratne and Strahan, 1996; Degryse and Ongena, 2005; D'Onofrio and Murro, 2013). The justification comes from the fact that physical proximity improves the quality of screening and monitoring of borrowers, making these actions less costly (Petersen and Rajan, 2002; Presbitero and Rebelotti, 2014).[9] We use a variety of measures of banking development, including branch density (number of bank branches divided by population) to check for the robustness of our results. The other measures we use are bank accounts per capita (number of bank accounts divided by population), bank amount per capita (amount outstanding divided by population) and bank credit per capita (credit amount outstanding per capita).[10] All financial variables are transformed to their natural logarithmic values.

As control variables, we use three district level measures: URBAN, PRIMEDU and SHSCSTPOP. URBAN represents the level of urbanisation in the district where the firm is located, as measured by the share of urban population in total population. PRIMEDU captures the proportion of individuals who are educated at primary level or below and SHSCSTPOP represents the proportion of SC/ST population in total population.

5. Descriptive statistics and results

5.1. Sources of funds for firms in the Indian informal manufacturing sector

We begin the empirical analysis by looking at the sources of external funds for family and non-family firms. An important feature of the changing financial landscape in India has been the decline in the importance of informal sources of finance over time, which fell from 70.8 per cent in 1971 to 39.6 per cent as a share of total debt (Tsai, 2004). This has been a consequence of the government requirement to banks to lend to small enterprises and agricultural households as well as the mandated branch expansion policy where the Reserve Bank of India required banks to open branches in under-banked rural and semi-urban areas.[11] We see from Table 1 that informal firms are heavily reliant on external funds both from institutional and non-institutional sources, and this is true of both family and non-family firms. In 2010–2011, institutional agencies provided 60.5 per cent of all loans to family firms, and the corresponding figure for non-family firms was 73.3 per cent (Table 1). A large proportion of borrowing from institutional sources was from commercial banks. Informal firms also depended on money lenders and friends and relatives for funds to finance their business related operations. In 2010–2011, money lenders provided 14.3 per cent of all loans to all informal firms while 6.9 per cent of all loans originated from friends and relatives (Table 1), with family firms were more reliant on these two sources of funding than non-family firms. We observe that microfinance is not an important source of funds for informal firms, as evident from Table 2, where the share of microfinance in total loans is only 0.8 per cent, as compared to around 55 per cent from commercial banks (data on informal firm borrowing from microfinance institutions is only available for 2010–2011). In the Indian case, microfinance primarily takes the form of self-help groups (SHGs) organised by low caste women in rural areas (usually, 10–12 women per group) (Shah et al., 2007). These groups help members to save funds on a regular basis and create an internal insurance fund for members to draw from in case of emergencies (Tsai, 2004). The SHGs in turn have linkages to banks, who lend directly to them or indirectly through non-governmental organisations. On the whole, we see that a significant proportion of external funds for informal firms come from term-lending institutions including commercial banks and other institutional agencies, either directly or indirectly. Other ways of accessing funds for informal enterprises that have been observed in developing countries such as mobile banking have not yet gained currency (in spite of a phenomenal growth in the use of mobile phones especially in urban areas),[12] though this may change rapidly over time, with greater government push towards financial inclusion for the poor in rural areas.[13]

5.2. Descriptive statistics

We begin the empirical analysis by presenting the summary statistics for the main dependent and independent variables used

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[8] Many studies use self-employment as a measure of new firm creation or equivalently, entrepreneurship (Evans and Jovanovic, 1989; Blanchflower and Oswald, 1998). However, as Ghani et al. (2011) point out restricting entrepreneurship only to self-employment will not include enterprises that create employment for others. In our case, self-employed category corresponds to firms that employ only family labour (henceforth, family firms). The firms that employ both family and hired labour (henceforth, non-family firms) are important in job creation in informal sector. For this reason, we did not confine our measure of entrepreneurship to family firms and included non-family firms as well.

[9] However, a limitation of the measure of branch density is that it may be increasingly misleading with the introduction of branchless banking.

[10] Kumar et al. (2005) uses credit per capita and deposits per capita as an alternative measure of supply of financial institutions to examine the trends in financial access in Brazil.

[11] However, Sen and Ghosh (2005) note that the share of lending to small enterprises in total bank lending to priority sectors may have declined over time.

[12] As the RBI's Financial Stability Report (2013) notes, the growth and acceptance of mobile banking has been below expectation in India. The problems the report identifies are low levels of awareness and acceptance, inability of the bank to seed the mobile number with the account number, handset compatibility with the mobile banking application, absence of collaboration and revenue sharing models between banks and mobile network operators and inability to get the USD channel in operation for mobile banking.

[13] At present, the use of mobile banking, even for urban areas, is very low and is estimated to be at 14 per cent for urban households (Gandhi, 2010).

Table 1
Loan share by source and enterprise type, 2000–2001 and 2010–2011.

Source of loan	2000–2001			2005–2006			2010–2011		
	Family firms	Non-family firms	All firms	Family firms	Non-family firms	All firms	Family firms	Non-family firms	All firms
Institutional agencies such as central and state level term lending institutions, government and commercial banks	60.4	70.0	69.7	47.7	58.5	58.3	58.9	72.0	71.6
Other institutional agencies	2.3	4.3	4.2	4.3	7.0	6.9	1.6	1.3	1.3
Money lenders	21.0	9.8	10.2	16.5	10.2	10.4	25.3	13.9	14.3
Business partner(s)	0.2	2.4	2.3	2.2	6.7	6.6	0.1	2.3	2.2
Suppliers/contractors	2.6	2.7	2.7	2.0	2.2	2.2	2.5	1.3	1.4
Friends and relatives	12.1	8.0	8.1	21.0	8.4	8.7	9.6	6.8	6.9
Others	1.4	2.8	2.8	6.2	6.9	6.9	2.1	2.3	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' estimates based on 56th, 62nd and 67th NSSO Survey rounds for the periods, 2000–2001, 2005–2006 and 2010–2011 respectively.
Note: Loans advanced by institutions/agencies such as Khadi and Village Industries Commission, Life Insurance Corporation, Provident Fund and Chit Fund are included under the category "other institutional agencies".

in our analysis in Table 3. Our dependent variables are number of firms (lntotent) and number of non-family firms (lnhirent). We find that average number of firms and non-family firms at the district level are 26,290 (exponential of 10.18) and 2607 (exponential of 7.87). With regard to our four indicators of banking development, we find that the average number of bank branches per capita, bank accounts per capita, bank amounts per capita and credits per capita are 0.00006, 0.3989, 4683.25 and 2677.71, respectively. Table 3 also report the summary statistics for the control variables and instruments used in the estimation. On average, Scheduled Cates (SCs) and Scheduled Tribes (STs) constitute 25 per cent of the total population at the district level. Average educational attainment is found to be considerably lower at the district level. Percentage of population that has attained pre-primary or primary levels of education is very low at 14 per cent. Interestingly 78 per cent of all districts are connected to a national highway or a broad-gauge railway line. We also find that, on average, 61 per cent of villages have better road connectivity.

Table 2
Loan share by source, 2010–2011.

Source of loan	Share in total loan	Share in total enterprises
Central and state level term lending institutions	1.3	0.8
Government (central, state, local bodies)	8.5	4.5
Commercial banks	54.9	30.1
Co-operative banks and societies	6.1	10.0
Micro-finance institutions	**0.8**	**4.4**
Other institutional agencies	1.3	2.5
Money lenders	14.3	31.4
Business partner(s)	2.2	0.8
Suppliers/contractors	1.4	5.2
Friends and relatives	6.9	16.0
Others	2.3	2.4
Total	100.0	100.0

Source: Authors' estimates based on 67th NSSO Survey round for the period, 2010–2011. Similar break-up is not available for 56th and 62nd survey rounds.
Note: Loans advanced by institutions/agencies such as Khadi and Village Industries Commission, Life Insurance Corporation, Provident Fund and Chit Fund are included under the category "other institutional agencies".

There is evidence to show that new firm formation is systematically linked to banking development. This relationship between banking development and firm formation at the district level for the Indian economy is better captured in Fig. 1. It is possible to notice that new firm creation (captured through formation of new enterprises) is substantially lower in regions with low levels of banking development. This relationship is clearly visible irrespective of the indicators that we used to capture the level of banking development. The descriptive analysis is suggestive and therefore, demands a much deeper analysis of the potential interactions between banking development especially local banking availability and new firm creation, which we do next.

We now move on to discuss the empirical results of our analysis. We first present the OLS estimates in Table 4. We begin our analysis by estimating Eq. (1) for all enterprises, which consists of family and non-family enterprises. We present the results for our four alternative measures of bank availability – BKOF, BKACT, BKAMT and BKCRDT – in columns 1–4 of Table 4. Our results clearly suggest that local banking availability and new firm creation are positively related. The coefficients are positive and significant at the 5 per cent level across all measures of banking development (except for BKOF) suggesting that local bank availability is associated with significant increase in enterprises in the informal sector in India.[14]

We repeat the analysis for non-family firms, which employ both family and hired labour. These are the larger enterprises in the sector and our conjecture is that the effect will be more

[14] This is similar to the finding by Brown et al. (2004) suggesting that access to external credit increase the growth of both employment and sales in the small firm sector in Romania.

Table 3
Summary statistics.

Variables	All enterprises				
	N	Mean	SD	Min	Max
Dependent variable					
lntotent	1436	10.17695	1.000377	6.77308	13.21858
lnhirent	1436	7.866047	1.412399	1.098612	11.53389
Measures of banking development					
BKOF	1436	0.00006	0.00003	0.00001	0.0002797
BKACT	1436	0.3988954	0.2756789	0.0333326	2.857369
BKAMT	1436	4683.25	10,560.75	127.1635	259,990.1
BKCRDT	1436	2677.707	9737.936	75.48553	259,337.1
Controls					
SHSCSTPOP	1436	0.251429	0.132057	0.026295	0.896631
PRIMEDU	1436	0.14474	0.05121	0.059946	0.875199
URBAN	1436	0.247027	0.258656	0.034835	3.967106
ROADVILLAGE	1420	0.621351	0.253262	0.129032	1
TRANSPORT	1436	0.777159	0.416298	0	1

Source: Authors' calculation from RBI and NSSO datasets.

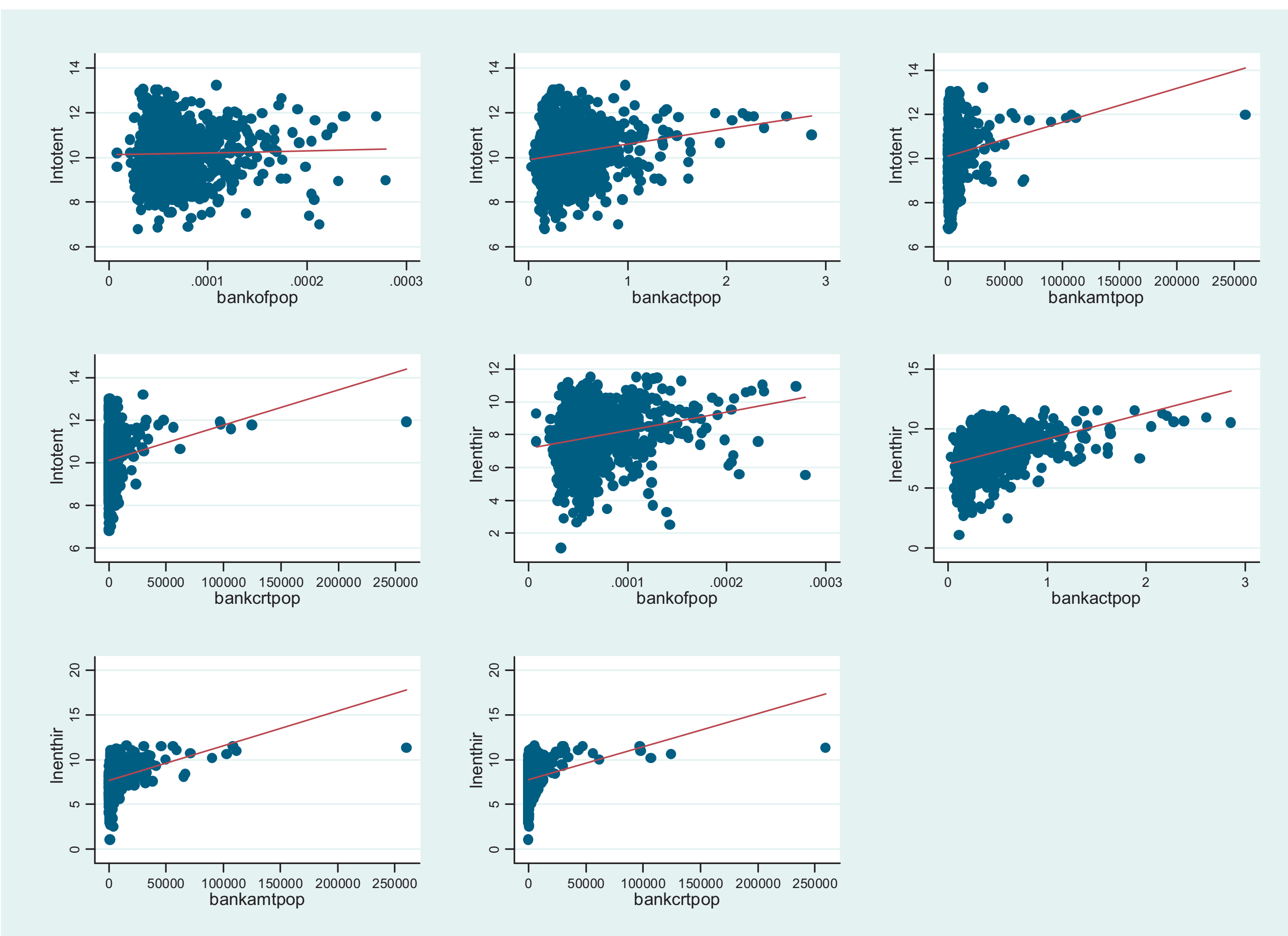

Fig. 1. Relationship between banking development and new firm creation. Note: bankofpop, bankactpop, bankamtpop and bankcrdtpop stand for bank offices per capita, bank accounts per capita, bank amounts per capita and bank credit per capita respectively.
Source: Authors' calculation from RBI and NSSO datasets.

Table 4
Regression results: OLS estimates.

Variables	Dep. var. = total enterprises				Dep. var. = non-family enterprises			
	1	2	3	4	5	6	7	8
BKOF	−0.1925** (0.0925)				0.3225** (0.1403)			
BKACT		0.2269*** (0.0526)				0.8805*** (0.0803)		
BKAMT			0.1501*** (0.0317)				0.4746*** (0.0454)	
BKCRDT				0.1171*** (0.0299)				0.4680*** (0.0410)
Constant	8.1055*** (0.9614)	10.3523*** (0.1143)	8.9280*** (0.2449)	9.2997*** (0.2058)	10.8838*** (1.4983)	8.8279*** (0.1910)	4.1044*** (0.3449)	4.6574*** (0.2772)
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.06	0.07	0.07	0.07	0.21	0.29	0.28	0.29
F value	10.02	24.31	26.12	24.18	63.25	124.57	135.38	144.09
N	1436	1436	1436	1436	1436	1436	1436	1436

Source: Authors' estimates based on RBI and NSSO datasets.
Note: Controls are SHSCSTPOP, PRIMEDU and URBAN.
Figures in parentheses are standard errors. *** and ** indicate significance at minimum 1% and 5% level respectively.

striking for these firms. Results presented in columns 5–8 of Table 4 unequivocally confirm the significant role of banking development in promoting entrepreneurial activities in large informal firms. The coefficients of all the four measures of district level banking availability are positive and significant at the 5 per cent level suggesting that greater presence of banking facilities leads to increase in the formation of large firms in the sector. More strikingly, the magnitudes of the coefficients on banking availability for non-family enterprises are higher than those for all enterprises, suggesting that banking development aids firm creation in the larger non-family informal firms than for smaller family owned informal firms. This is in contrast to the existing evidence in the literature which suggests that small firms tend to benefit more with increase in access to finance as small firms are financially more constrained than large firms (Angelini and Generale, 2008; Beck et al., 2005; Beck, 2007; Kuntchev et al., 2012). One possible explanation of our results is that small firms in the informal sector are family firms which do not employ any hired labour. As suggested by Banerjee and Duflo (2008), these family firms are often in business simply because running a small enterprise allows them to bring in additional income with little additional effort and they are unlikely to expand or invest in their businesses. On the other hand, the 'big' firms are more likely to modify their behaviour in response to changes in local credit markets and therefore the effect of banking development will be higher for these firms.

For reasons mentioned in Section 4, we also consider the potential endogeneity of our measures of district level banking development. The Durbin–Hu–Hausman test (see in Table 5) does indicate the strong presence of the endogeneity of variables representing district level bank availability. We thus estimate Eq. (1) using instrumental variable (IV) method. As mentioned before, we use ROADVILLAGE and TRANSPORT as instruments for our measures of finance constraint. We present IV results in Table 5. The various test statistics show that the IV procedure works well for our estimations. The instruments pass the test for weak instruments, implying they are strongly correlated with our finance variables. This is important since weak instruments can lead to severely biased estimates. Further, the Sargan over identification test statistic is insignificant for all the models, confirming that the instrumental variables are indeed exogenous and correctly excluded from the performance equation. In Table 5, *R*-squared statistics is not reported since it has no natural interpretation in IV regressions (O'Brien and David, 2009). First, IV method though produces better estimates of the ceteris paribus effect of an endogenous variable on a dependent variable, overall goodness-of-fit of a model may very well decline when a variable is treated as endogenous (Wooldridge, 2003). Second, it is inappropriate to check if including an endogenous variable in the model incrementally improves overall model fit (O'Brien and David, 2009).

For IV estimations too, we follow the same order in the specifications that we test as in Table 4. In columns 1–4 of Table 5, we report the results for all firms (family and non-family firms) and in columns 5–8, we report the results for non-family firms. We find that the effect of district level banking development on new firm creation is still positive and statistically significant and, more evidently, the use of instruments tends to increase the magnitude of the coefficient. Our findings are thus essentially robust with regard to endogeneity concerns, and we can be rather confident that the district level banking development indeed promotes new firm creation in the informal sector.

We also find that the response of firms to presence of bank facilities is significantly higher among large firms. This suggests that firms that already made the transition out of family labour are in the greatest need of external finance and benefit the most from greater banking development. Across the coefficients of our four measures of banking development, BKOF and BKACT seem to have a greater effect on new firm creation as compared to BKAMT and BKCRT. This indicates that the banking infrastructure may be more important for new firm entry than availability of credit per se. Overall, our results show that district level bank

Table 5
Regression results: IV estimates.

Variables	Dep. var. = total enterprises				Dep. var. = non-family enterprises			
	1	2	3	4	5	6	7	8
BKOF	1.2036***				5.0263***			
	(0.3462)				(0.7832)			
BKACT		0.6455***				2.6989***		
		(0.1557)				(0.2649)		
BKAMT			0.5364***				2.2411***	
			(0.1340)				(0.2515)	
BKCRDT				0.3354***				1.4021***
				(0.0791)				(0.1215)
Constant	21.9530***	10.8300***	6.2685***	7.9415***	57.8558***	11.4102***	−7.6497***	−0.6630***
	(3.4708)	(0.2327)	(0.9208)	(0.4800)	(8.0297)	(0.4792)	(1.6406)	(0.6704)
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y
F value	16.53	17.17	18.16	19.43	29.02	50.81	35.74	59.25
N	1420	1420	1420	1420	1420	1420	1420	1420
Presence of endogeneity (Durbin–Wu–Hausman test)								
Chi^2	23.1875	8.9166	10.1581	9.8179	119.173	74.5713	94.4769	74.5785
	(0.0000)	(0.0028)	(0.0014)	(0.0017)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
F	25.0501	9.5129	10.6375	10.2615	167.004	102.876	123.608	92.3561
	(0.0000)	(0.0021)	(0.0011)	(0.00014)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Coefficient values of instruments								
TRANSPORT	−0.0348	0.0500	−0.0229	0.0394	−0.0348	0.0500	−0.0229	−0.0394
	(0.0230)	(0.0295)	(0.0436)	(0.0416)	(0.0230)	(0.0295)	(0.0436)	(0.0416)
ROADVILLAGE	0.4174***	0.7776***	0.9542***	1.5188***	0.4174***	0.7776***	0.9542***	1.5188***
	(0.0596)	(0.0676)	(0.1053)	(0.1081)	(0.0692)	(0.0676)	(0.1053)	(0.1097)
Tests for validity of the instrument								
Underidentification test: Kleibergen–Paaprk LM statistic (Chi^2 *P*-value)	42.050 (0.000)	81.820 (0.000)	60.369 (0.000)	105.342 (0.000)	42.050 (0.000)	81.820 (0.000)	60.369 (0.000)	105.342 (0.000)
Weak identification test: Kleibergen–Paaprk Wald *F* statistic	27.281	66.999	41.357	95.812	27.281	66.999	41.357	95.812
Sargan (overidentification) statistic (Chi^2 *P*-value)	1.127 (0.29)	0.004 (0.95)	0.525 (0.47)	0.123 (0.73)	5.121 (0.03)	0.051 (0.83)	3.631 (0.06)	1.382 (0.24)

Source: Authors' estimates based on RBI and NSSO datasets.
Note: Controls are SHSCSTPOP, PRIMEDU and URBAN.
Figures in parentheses are standard errors. *** and ** indicate significance at minimum 1% and 5% level respectively.

availability has a strong positive effect on new firm formation in the informal manufacturing sector in India. We find that that the effect is the strongest for large firms which employ both family and non-family workers as compared to small firms which employ only family workers.

6. Conclusions

In this paper, we examine whether the presence of bank facilities exerts a positive influence on new firm creation. The country we study is India, a geographically large country, with clear and distinct variations in small firm growth and banking development. We focus on the effect of district level banking development on new firm creation in the informal manufacturing sector in India, and ask whether the presence of financial facilities and intermediaries make a difference in growth in the number of informal firms using a panel data set and Indian districts as units of analysis. We carry out the analysis for all firms (both family and non-family firms) and non-family firms separately to find out whether the effect is stronger for firms that employ hired labour. We find clear evidence of banking development having a positive and significant effect on growth in the number of firms in the Indian informal manufacturing sector. We also notice that the effect is most pronounced for those firms that employ hired labour suggesting that banking development matters the most for the larger enterprises in the informal sector. This perhaps indicates that larger enterprises need working capital to grow, and greater access to external finance can considerably help them in expanding their businesses by investing more in materials and workers.

Given the high level of regional inequality, and the wide variations in economic growth across states and regions in India, the importance of banking development for new firm creation in the informal manufacturing sector in India deserves policy attention. This is particularly true in the current context where the Indian economy has witnessed significant financial liberalisation and state-directed spread of bank branches in areas with low banking development is no longer a policy option. Tax and other incentives for financial intermediaries to open up offices in financially underdeveloped areas and support for micro-finance organisations that may be willing to lend to the smallest enterprises in the informal sector are possible policy initiatives that could be considered for a more equal distribution of financial facilities across the country. If access to financial institutions cannot be made easier, an independent credit institution exclusively for micro and small firms in the informal sector can be established. The Grameen Bank of Bangladesh is a successful example of such an initiative (Raj, 2011).

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